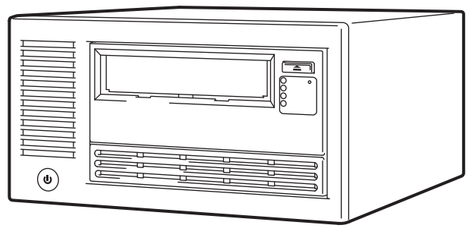
HP StorageWorks Ultrium 1840/960

External tape drive



Start Here

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1 Introduction

This poster describes how to install your HP StorageWorks Ultrium full-height tape drive.

- Connect to a dedicated Ultra320 SCSI HBA for Ultrium 1840 and 960 and do not daisy chain with other drives.
- Use the supplied SCSI cable.
- Connect directly to the storage server (not over a network).
- Use the correct driver.
- Use HP Library & Tape Tools to check system and tape drive performance.

WARNING: To avoid personal injury or damage to the server or tape drive, disconnect your server from the mains power supply before installing the tape drive.

Always use the power cable supplied with the tape drive. See also Safety booklet on the CD-ROM.

2 Preparing the host

IMPORTANT: Refer to **www.hp.com/go/connect** for detailed compatibility information about servers, operating systems, software applications and SCSI HBAs.

SCSI HBA

We recommend adedicated Ultra320 host bus adapter for Ultrium 1840 and 960. If necessary, install a new HBA before you connect the tape drive. Ensure that you are connecting to a supported HBA running the recommended firmware version.

Your tape drive will work with lower-rated LVDS SCSI but performance may be degraded. Single-ended SCSI will degrade performance and limit cable length. **Do not** attach to narrow or HVD SCSI.

Drivers

For Windows systems, we recommend that you use the installer on the CD-ROM. Subsequent updates are available from Windows Update or the HP web site. For other operating systems, patch to the latest version of the operating system, following the instructions in the patch documentation. See also the "UNIX Configuration Guide" on the CD-ROM.

Backup software

Always upgrade your software application to ensure it works correctly with the tape drive. The in-box software provides full support for all the features of your tape drive.

NOTE: The HP driver is suitable for use in most applications, but refer also to the documentation of your software application to ensure you are using the recommended driver.

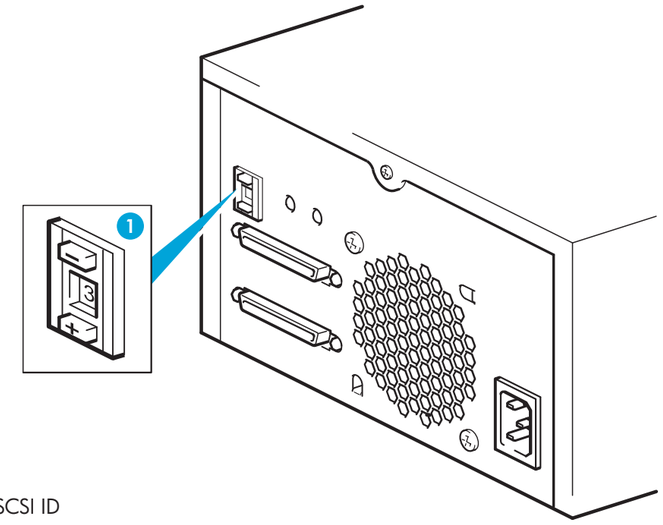
Free diagnostic tool

HP StorageWorks Library & Tape Tools (L&TT) is the recommended diagnostic and support tool for your HP tape drive. It is available free on your HP StorageWorks CD-ROM or at **www.hp.com/support/tapetools**.

Use it to verify installation, upgrade firmware and to aid in troubleshooting.

3 Setting the SCSI ID

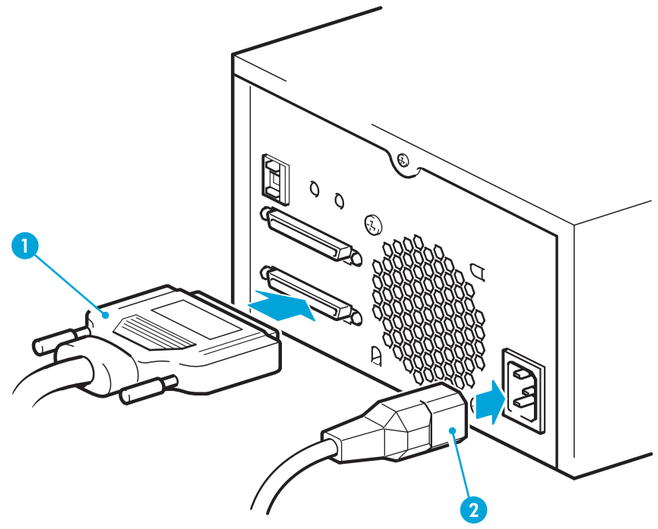
Your HP StorageWorks Ultrium drive is shipped with a default SCSI ID of 3, but it can beassigned any unused ID between 0 and 15. Do not use SCSI ID 7, which is reserved for the SCSI controller, or SCSI ID 0, which is typically assigned to the boot disk.



1 SCSI ID

4 Connecting the tape drive

CAUTION: Turn off and remove the power cords from the server and all attached accessories.



1 SCSI cable **2** Power cable

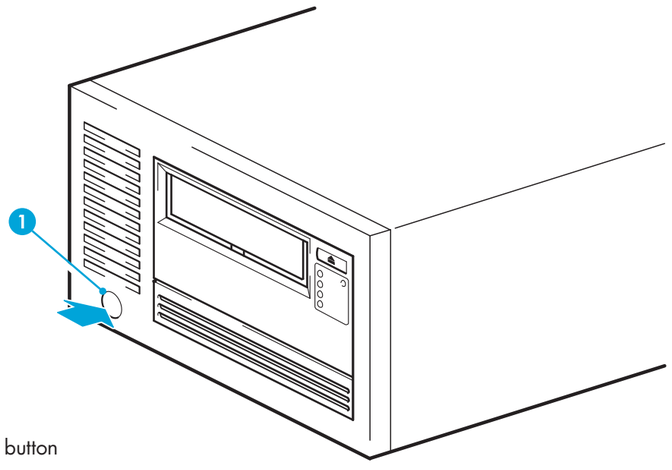
SCSI cable and termination

Use the 68-pin, wide, VHD-to-HD SCSI cable **(1)** supplied with the tape drive. The tape drive provides active termination; it does not require a terminator, if it is the only or the last device on the SCSI bus. Daisy-chaining multiple devices is not recommended. If you do so, do not mix drive families (only daisy-chain with other Ultrium tape drives) and attach no more than two devices to the same SCSI bus. The last device on the SCSI chain must be terminated correctly.

Power cord

Use the supplied, HP approved power cord **(2)**. This cord is appropriate for your specific geographic region.

5 Powering on the tape drive and verify connection



1 Power button

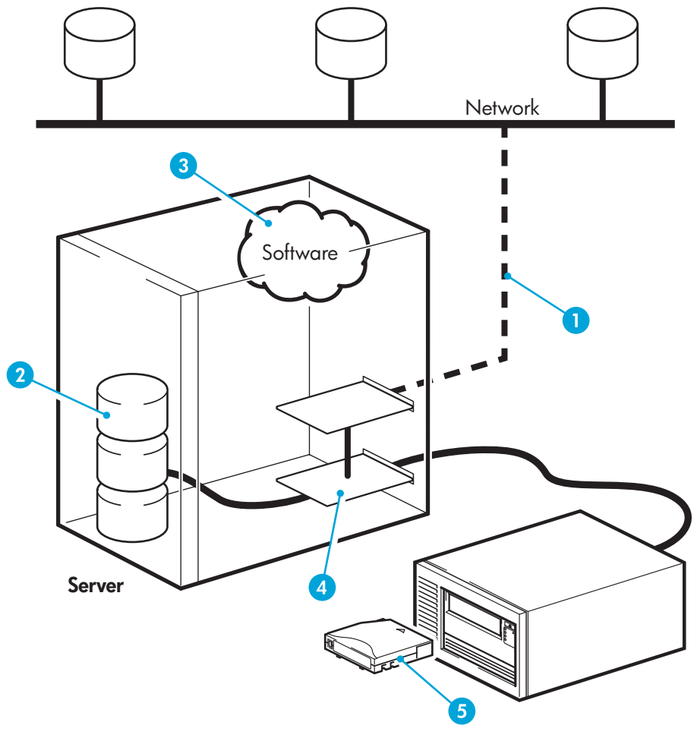
- Plug in the host server or workstation and all attached devices.
- Power on the tape drive using the power button located at the front of the tape drive.
- Check the Ready LED on the front panel to make sure the tape drive is ready for use.
- Turn on any other devices you turned off earlier. Turn on the server.
- Verify the connection using HP Library & Tape Tools.

6 Checking the performance of your product

If performance is not meeting expectations and you are not meeting your backup window, check for bottlenecks in your system architecture.

NOTE: See **www.hp.com/go/connect** for recommended backup applications and SCSI HBAs and **www.hp.com/support/pat** for software configuration and performance advice.

What causes bottlenecks?



1. We recommend data is not backed up or restored over Ethernet. In order to deliver optimum data streaming, connect the drive directly to the storage server.
2. A single disk may limit backup performance. Have disks in parallel (e.g. RAID5) if possible or, if your backup application supports interleaving of data, back up streams from multiple sources.
3. Use the latest version of your backup application. Native backup applications, such as Windows backup, may limit performance.
4. Connect the tape drive to a dedicated SCSI bus.
   SCSI card: Use a PCI-express or a 64-bit PCI expansion slot. Use an Ultra320 SCSI HBA in a 64-bit/66MHz or better expansion slot for Ultrium 1840 and 960.
5. For optimum performance use HP Ultrium 1.6 TB and Ultrium 1.6 TB WORM cartridges with the Ultrium 1840, HP Ultrium 800 GB and Ultrium 800 GB WORM cartridges with Ultrium 960.

7 Hardware encryption and your Ultrium 1840 tape drive

Your HP Ultrium 1840 tape drive provides the ability to hardware encrypt your data, applying the strongest level of AES industry-standard encryption and protecting the data from unauthorized access and use. Encryption is supported only on Ultrium 1.6 TB media (C7974A and C7974W); media encrypted on an HP Ultrium 1840 drive can only be read on a compatible Ultrium tape drive that supports hardware encryption.

Hardware encryption can be used with or without compression and without speed or capacity penalties.

IMPORTANT: Hardware encryption is a powerful feature, but should be used with care. If you need to import your media onto another machine or to recover after disaster you will be required to enter an encryption key.

- Hardware encryption is turned off by default and is switched on by settings in your backup application, where you also generate and supply the encryption key.
- Your backup application must support hardware encryption for it to work. The software supplied with the tape drive provides this support. See **www.hp.com/go/connect** for an up-to-date list of backup software.
- You should keep a record or backup of your encryption keys and store them in a secure place separate from the computer running the backup software.
- If you are unable to supply the key when requested to do so, neither you nor HP Support will be able to access the encrypted data.

For more information about AES encryption, encryption keys, and using hardware encryption with your HP Ultrium 1840 tape drive, see the White Papers on **h18006.www.hp.com/storage/tapewhitepapers.html**.

8 Choosing and looking after media

Your high-performance tape drive works best with high-performance HP Ultrium media. Always use the recommended data cartridges (see table).

table1: Ultrium data cartridge compatibility

	Ultrium 200 GB* (C7971A)	Ultrium 400 GB* (C7972A)	Ultrium 800 GB* (C7973A)	Ultrium 800 GB* WORM (C7973W)	Ultrium 1.6 TB* (C7974A)	Ultrium 1.6TB* WORM (C7974W)
Type of Drive						
Ultrium 1840 drives	No	Read only	Read/Write	Write Once Read Many	Read/Write (Recommended)	Write Once Read Many (Recommended)
Ultrium 960 drives	Read only	Read/Write	Read/Write (Recommended)	Write Once Read Many (Recommended)	No	No

* Capacity assumes 2:1 compression.

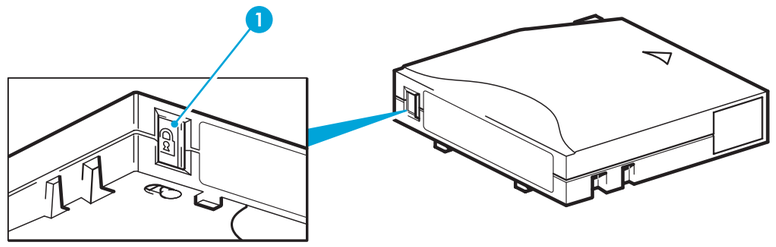
The recommended cleaning cartridge is the HP Ultrium universal cleaning cartridge, C7978A. This cartridge is designed to work with any Ultrium drive and may be used for up to 50 cleans.

It pays to look after your media

Many tape drive and backup failures are caused by damaged or badly handled tape media.

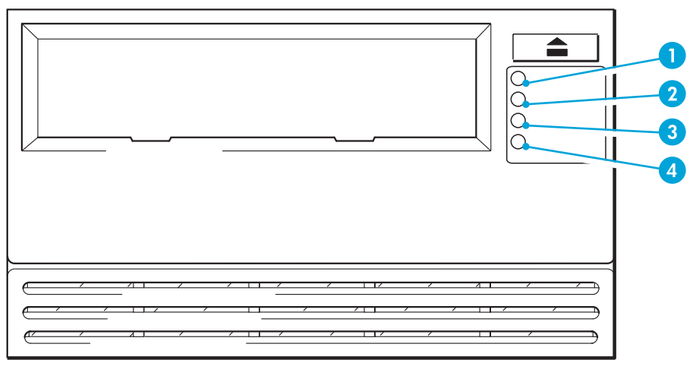
- Keep media in the case provided.
- Follow the temperature, humidity and acclimitization guidelines on the media packaging.
- Avoid dropping it or rough handling, as this is likely to damage the cartridge.
- Inspect it regularly for damage.
- Do not exceed normal cartridge life (260 full volume backup or restore operations).

For detailed information on media care and best practice and to order online, refer to **www.hp.com/go/storagemedia/ultrium**.



1 Write-protect switch

9 Understanding the LEDs



1 Ready – green
- On: the drive is ready for use.
- Off: the drive power is off or there was a failure during self-test.
- Flashing: the drive is busy.
- Flashing repeated pattern: the drive is in OBDR (One-Button Disaster Recovery) mode.

2 Drive – amber
- Off: no fault has been detected.
- Flashing: the drive mechanism has detected a hardware error.

3 Tape – amber
- Off: no fault has been detected.
- Flashing: the cartridge currently in the drive is faulty (damaged or unsupported). Discard the cartridge.

4 Clean – amber
- On: cleaning cartridge in use.
- Off: the drive does not require cleaning.
- Flashing: the drive needs cleaning.

10 Troubleshooting

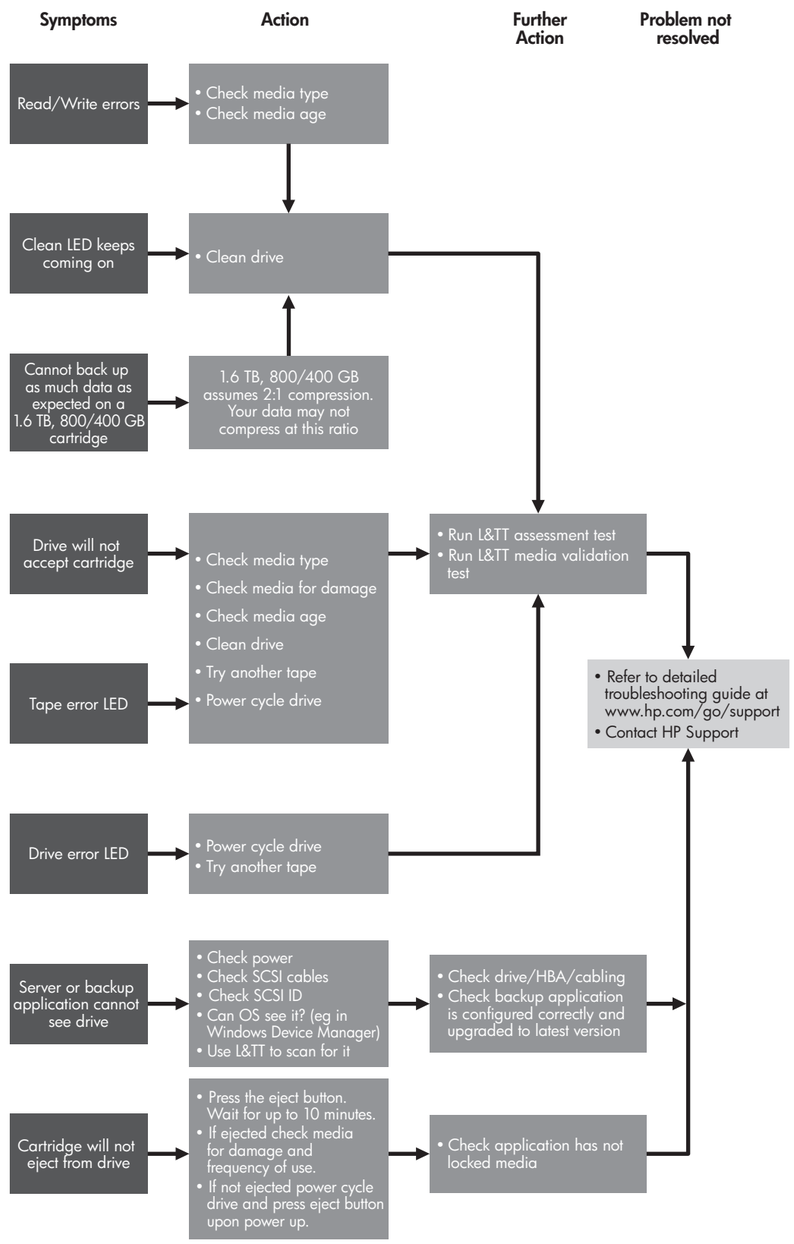
NOTE: HP StorageWorks Library & Tape Tools (L&TT) is the free, recommended diagnostic and support tool for your HP tape drive. It can be downloaded from the HP StorageWorks CD-ROM or as a download from the HP website at **www.hp.com/support/tapetools**.

The detailed Troubleshooting Guide at **www.hp.com/go/support** contains the most comprehensive and up-to-date troubleshooting information.

If your server or drive does not work after installation, or your server or application cannot see the drive, check the physical cabling and configuration.

For most problems, use L&TT as a first step in identifying and resolving the problem.

General Troubleshooting


Symptoms
Action
Further Action
Problem not resolved
Read/Write errors
• Check media type
• Check media age
Clean LED keeps coming on
• Clean drive
Cannot back up as much data as expected on a 1.6 TB, 800/400 GB cartridge
1.6 TB, 800/400 GB assumes 2:1 compression. Your data may not compress at this ratio
Drive will not accept cartridge
• Check media type
• Check media for damage
• Check media age
• Clean drive
• Try another tape
• Power cycle drive
• Run L&TT assessment test
• Run L&TT media validation test
Tape error LED
• Refer to detailed troubleshooting guide at www.hp.com/go/support
• Contact HP Support
Drive error LED
• Power cycle drive
• Try another tape
Server or backup application cannot see drive
• Check power
• Check SCSI cables
• Check SCSI ID
• Can OS see it? (eg in Windows Device Manager)
• Use L&TT to scan for it
• Check drive/HBA/cabling
• Check backup application is configured correctly and upgraded to latest version
Cartridge will not eject from drive
• Press the eject button. Wait for up to 10 minutes.
• If ejected check media for damage and frequency of use.
• If not ejected power cycle drive and press eject button upon power up.
• Check application has not locked media

11 Other sources of information

- The HP StorageWorks Tape CD-ROM for HP StorageWorks Library & Tape Tools (L&TT) and full Installation and User instructions' in English and 12 other languages.
- **www.hp.com/support/tapetools** for updates, compatibility information and the latest version of L&TT.
- **www.hp.com/support/ultrium** for up-to-date product information.
- **www.hp.com/go/connect** for recommended products and configurations.
- **www.hp.com/support/pat** for further information about getting the best performance from your tape drive.
- **www.hp.com/go/obdr** for detailed information about HP One-Button Disaster Recovery.
- If necessary, specialist technical help can be obtained from the HP Customer Call Centers. Contact details can be found at **www.hp.com**.